

B&W'S PROPOSED BURNER DESIGN UPGRADE REVIEW MEETING

AGENDA

OUTSTANDING ISSUES

I. OVERHEATING

- A. Objective- Extend life of burners and minimize routine maintenance requirements by eliminating the overheating and thermal expansion damage.

Concerns-

1. Material Considerations
2. Outer Air Assembly Rearplate Thermal Compensation and Restraint
3. Coal Nozzle Tip Overheating
4. Air Sleeve Casing Overheating
5. Casing Seal Arrangement
6. Modeling Confirmation- Finite Element Analysis

II. SECONDARY AIR FLOW

- A. Objective- Establish cooling air flows across the burner fronts to eliminate overheating when the burners are not in service, yet ensure uniform air distribution while burners are in-service.

1. Two Position Outer Register Settings
2. Cooling Air Flow Requirements
3. Burner Front Temperature Requirements
 - a. Thermocouple requirements?

- B. Objective- Eliminate flue gas recirculation back into the burners which has been causing coal nozzle tip pluggage and slagging on the inner and outer air sleeves, plus fly ash accumulation in the windbox.

1. Resolve Flue Gas Recirculation back into the Burner (eliminate slagging and fly ash lick back)
2. Determine Velocity Profiles of the three air zones (primary, inner (spin) and outer air zones)

- C. Objective- Balance secondary air flows from burner to burner

(across a burner level) without having to use the air registers to accomplish this (which are required for flame adjustments).

1. Balance Burner to Burner Air Flows
 - a. Air Flow Modeling
 - b. Testing

D. Objective- Balance secondary air flows on a row to row and on a front wall to back wall basis to achieve appropriate secondary air flow ratios.

1. Balance Individual Burner Rows
 - a. Air Flow Modeling
 - b. Balancing
2. Air Flow Monitoring and Control

III. BURNER LINE FIRES

A. Objective- Stop burner line fires by establishing air flow profiles which eliminate recirculation into the coal nozzles (in both in and out of service conditions).

1. 100% Cold Primary Air Flow Sweep on Start and Stop
2. Eliminate Flue Gas Recirculation into Nozzle
3. Eliminate Burner Line Fires

IV. BURNER SETUP

A. Objectives- Determine burner operating parameters.

1. Relative Air Flow Quantities (Inner to Outer to Primary Air)
2. Windbox Pressure Drops (I/S and O/S)
3. Register Positions
 - a. Inner (spin) vane positions
 - b. Backplate setting
 - c. Outer Register Position
4. Cooling Air Flow Requirements
5. Burner Front Temperature

V. BURNER OPERATION AND PERFORMANCE

A. Objective- Maintain and/or improve combustion and operating parameters of the burners. These parameters include:

- a. NOx emission levels (maintain at or below 0.44 lbs/MBtu)
 - b. O2 levels of 3.2% (design) or less with ranges (maximum to minimum) of less than 1.5% O2
 - c. CO levels of 150 ppm or less with ranges (maximum to minimum) of less than 75 ppm
 - d. LOI ash levels of less than 1.0% (with 70% thru 200 mesh coal)
 - e. secondary air flow balancing of +/- 3% from burner to burner
 - f. out of service cooling air flow requirements
 - g. burner front operating temperatures (I/S & O/S)
 - h. boiler efficiency levels
- B. Objective- Improve maintenance and operating conditions on the burners. These parameters include:
- a. minimize eyebrow formation
 - b. eliminate flue gas recirc (slagging and fly ash in burner)
 - c. improve scanner performance
 - d. extend burner life
 - e. minimize maintenance requirements

VI. BURNER TESTING

- A. Objective- Test operating and performance conditions of the burners to determine acceptability of the modifications.
1. Test the fore mentioned parameters.